

## **CHAPTER 7**

### **METER READING BENEFITS**

**MARSHAL ENDERBY**

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## CHAPTER 7

### METER READING BENEFITS

#### MARSHAL ENDERBY

##### I. INTRODUCTION AND SUMMARY

This chapter concerns the operational benefits associated with meter reading resulting from San Diego Gas and Electric Company's ("SDG&E") Advanced Metering Infrastructure ("AMI") Project deployment. Over 50 percent of the potential operational benefits predicted for the AMI project relate to meter reading.

DRA has reviewed SDG&E's estimated meter reading benefits and finds them reasonable. As discussed in Section IV below, SDG&E's total meter reading costs are about 40%, on a per meter read basis, than those of Pacific Gas and Electric Company ("PG&E").<sup>1</sup> Reasons for the difference likely include the recent implementation of a "two-tier" wage agreement for SDG&E's meter readers, lower labor costs for SDG&E's Customer Service Field (CSF) employees, and greater meter reading efficiency within SDG&E's service territory. DRA also has reasons to believe that SDG&E's meter reading labor costs are well below those of Southern California Edison Company ("SCE") and other California utilities.<sup>2</sup>

DRA considered whether SDG&E's meter reading benefits could be increased in the AMI business case based on the disparity between SDG&E's meter reading and CSF labor rates and those of PG&E.<sup>3</sup> However, DRA elected not to

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<sup>1</sup> See Table 7-2 and the discussion on page 7-11.

<sup>2</sup> Meter reading labor cost data from a P.A. Consulting Company benchmark study for 50 U.S. utilities shows the labor cost differences between many California utilities, including both CPUC regulated and municipal utilities. This shows SDG&E's meter reading labor costs being markedly lower than those of SCE and other utilities in California.

<sup>3</sup> DRA considered the possibility of increasing benefits because the AMI benefits are expected to last for many  
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1 make a change given the inherent difficulties in forecasting future labor agreements  
2 and specific labor market trends over many years. Nevertheless, based on current  
3 estimates of labor costs, if SDG&E's meter reading related labor costs were at the  
4 same level as those of PG&E, then SDG&E's estimated meter reading benefits would  
5 be up to 18% higher.

6 SDG&E indicates that it is in the process of developing a procedure for  
7 dealing with situations where customers do not allow AMI installers access to their  
8 meters. DRA is concerned that Tariff Rule 9A5 does not allow SDG&E to estimate  
9 bills for an unlimited period of time for all such customers and DRA recommends that  
10 SDG&E address this possible issue and, if necessary, request Commission  
11 authorization to estimate bills for a limited period of time. In regard to the  
12 development of a procedure for accessing meters, DRA recommends that SDG&E be  
13 allowed to submit its procedure well before the AMI deployment begins. These  
14 issues are discussed in Section III below.

## 15 **II. HOW AMI REDUCES SDG&E'S METER READING AND** 16 **CUSTOMER SERVICE COSTS**

17 AMI is expected to eliminate the labor and non-labor costs required for  
18 regular manual monthly meter reading. Meter readers will no longer visit customer  
19 premises and the Customer Service Field (CSF) staff will be reduced by  
20 approximately 25%. Also, meter access problems will be eliminated for all monthly  
21 meter readings and for a majority of "change of account" activities.

22 Currently, when customers move from one residence or business to  
23 another, CSF personnel must visit the meter and complete a "close order" or a

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years (about 17) and because significant labor cost differentials in adjacent, similar labor markets rarely last for such a long period of time. Moreover, SDG&E's labor costs also appear to be well below those of Southern California Edison and other utilities in California. This is based on a recent utility "Benchmarking Study" performed by P.A. Consulting. An interesting fact, based on Bureau of Labor Statistics data, is that SDG&E currently has the lowest unemployment rate of any urban area in California (about 4%).

1 “change of account” order to obtain the “end read” for the departing customer and the  
2 “start read” for the new customer. When meter reading errors are suspected, CSF  
3 employees must perform a “read verify” order at the customer’s meter and change  
4 party/special requests. These existing CSF functions can be remotely controlled  
5 with SDG&E’s proposed AMI system. For every four meter readers, SDG&E needs  
6 to employ about one CSF person to perform what are called meter service functions as  
7 described above.

8 The AMI project will make it possible to automate the meter reading of  
9 virtually all electric and core gas meters currently read by meter readers. In addition,  
10 the meter service functions performed by CSF staff will no longer be required (saving  
11 the labor of about 1 CSF employee for every 4 meter readers). Labor costs to be  
12 saved include labor for meter readers and CSF staff, office meter read routing and  
13 support, vehicles and associated fuel, hardware and software, equipment, uniforms,  
14 and supplies. Capital costs to be saved include avoiding the need to replace meter  
15 reading handheld data collection devices, which are replaced on a 5-7 year cycle, and  
16 CSF mobile data terminals and modems. Cost reductions have been included that  
17 would have been incurred in 2014-2015. SDG&E estimates that this will result in a  
18 total annual cost savings of \$11.5 million on an average annual basis at full  
19 deployment of the AMI Project for all electric and core gas accounts.<sup>4</sup> Capital  
20 benefits are estimated to be about \$195,000 related to the meter reading and CSF  
21 functions. Total operational benefits amount to about \$22.4 million on an average  
22 annual basis at full deployment.

23 The AMI project will also result in more accurate and timely billing of  
24 customers. Meter reading errors currently account for 78% of adjusted bills. Since  
25 AMI meter reads will be transmitted electronically, the number of billing adjustments

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<sup>4</sup> See the AMI Application 05-03-015, “Volumes 1 and 2,” page JST-5, Table JST 3-2. The \$11.5 million is about 51% of total operational benefits (both Capital and O&M).

1 will drop dramatically. With a manual meter reading system, 15-20% of meters are  
2 currently read one to four days after the scheduled meter read date, delaying the  
3 processing and mailing of bills. Another 3% of bills are held by Billing for  
4 investigation. AMI will reduce dramatically the number of delayed bills. SDG&E  
5 estimates that this will result in a total annual cost savings of \$6.4 million for full  
6 deployment of the AMI Project for all electric and core gas accounts.

7 Customer service operational benefits of an AMI system fall into five  
8 categories as discussed in SDG&E's testimony: 1) Meter Reading – reduced costs  
9 and customer convenience; 2) Customer Service Field (CSF) – more convenient  
10 service dates and reduced costs; 3) Billing – improved accuracy and timeliness; 4)  
11 Meter Revenue Protection – reduced meter failures, reduction and early detection of  
12 energy theft and OBR, benefiting SDG&E customers; and 5) Safety – reduction in  
13 meter-reading and related accidents. This chapter concerns the first three categories.  
14

### 15 **III. AMI PROJECT RISK AND MITIGATION OF METER** 16 **READING, CSF, AND BILLING BENEFITS**

17 SDG&E states that the major risk for realizing the meter reading and  
18 billing benefits is the inability to reduce SDG&E's meter reading force (and CSF  
19 staff) as quickly as estimated. SDG&E has assumed that meter reader positions will  
20 be eliminated within two billing cycles after installation. To eliminate a meter  
21 reading position, SDG&E must be able to remotely read the majority of meters on an  
22 associated meter route. The ability to eliminate a route then becomes mostly a  
23 function of gaining access to customer premises, which is discussed as a risk in Mr.  
24 Carranza's testimony (Chapter 12, Volume 3): "SDG&E may estimate bills for a  
25 small number of customers for a short time period to eliminate whole meter routes."

26 SDG&E estimates 1% of its metering end points will be hard to access.  
27 When this happens, the installation vendor will make three installation attempts,  
28 which may be a combination of premise visits, telephone calls and notifications by

1 mail. After three unsuccessful attempts, the account will be returned to SDG&E for  
2 further evaluation. SDG&E may decide to handle the problem itself or ask the  
3 installation vendor to complete the meter installation at an incremental cost.  
4 SDG&E has included incremental costs for handling access issues for 1% of  
5 customers.<sup>5</sup>

6 In residential areas, the vendor will do a mass notification prior to  
7 entering the area to install meters. The notification will indicate that the vendor will  
8 be in the area installing AMI-enabled electric and gas metering equipment. If no  
9 appointment is requested, the first premise visit will be a “cold call”. The meter  
10 installers will complete the meter installations if they can safely gain access and  
11 install the metering equipment.

12 SDG&E states that current tariff rules allow SDG&E to estimate bills  
13 for customers who do not get new meters within SDG&E’s deployment schedule.<sup>6</sup>  
14 Rule 9A5 is cited:<sup>7</sup> “If the utility is unable to read the customer’s meter on the  
15 scheduled reading date, the utility may bill the customer for estimated consumption  
16 during the billing period, and make any necessary corrections when a reading is  
17 obtained. Adjustments for any underestimate or overestimate of a customer’s  
18 consumption will be reflected on the first regularly scheduled bill rendered and based  
19 on an actual reading following the period of inaccessibility.” SDG&E also states  
20 that the utility can terminate service if a customer refuses to allow access for a new  
21 meter installation, and that written notice of at least seven days is required.<sup>8</sup>

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<sup>5</sup> See the Assumption Workpapers, workbook Meter Install.xls, Worksheet Misc.. SDG&E received pricing for resolving individual difficult to access meters as follows: \$60.31 for gas installations and \$54.70 for electric installations.

<sup>6</sup> SDG&E Response 1 to DRA DATA REQUEST NUMBER 17.

<sup>7</sup> SDG&E cites CPUC rule 9A5 as allowing SDG&E to estimate bills for customers with access problems.

<sup>8</sup> SDG&E response to DRA DATA REQUEST NUMBER 17. SDG&E cites tariff rules 16A11 and Rule 11 (seven days written notice is required).

1 In regard to bill estimation, DRA raised the question of estimating bills  
2 (and the allowed duration of such estimation) for a customer whose meter can be read  
3 manually, but where the meter installer would nonetheless be unable to access the  
4 meter.<sup>9</sup> DRA's question was "Would SDG&E still be allowed to estimate the bill  
5 until such time as either the customer is terminated or access is gained and the meter  
6 is changed?"<sup>10</sup> This issue was addressed by PG&E in its AMI proceeding. The  
7 section of Rule 9A5 cited above does not seem to allow bill estimation for such a  
8 customer. DRA also asked SDG&E, "If yes, by what authority would SDG&E be  
9 allowed to estimate the bill, and for how long could the bill estimation continue?"<sup>11</sup>

10 In responding to DRA's questions in the paragraph above, SDG&E  
11 stated it believes that tariff Rule 9A5 gives it the authority to estimate bills and does  
12 not limit the number of times a customer's bill can be estimated.<sup>12</sup> PG&E, in its  
13 AMI proceeding, requested that the Commission grant it the authority to estimate bills  
14 for up to three months for all customers with change of meter access problems  
15 (whether or not the meter could continue to be read manually). PG&E did not  
16 believe that it had the authority to estimate bills for all customers who refused to  
17 allow access for a meter change and therefore might have to continue manually  
18 reading their meters. PG&E stated that their plan was to deal with such customers  
19 over a three month period and PG&E provided estimates of the costs of providing  
20 manual meter readers for such meters if the Commission failed to grant it authority to  
21 estimate bills for up to three months. After the three month estimation period,  
22 PG&E planned to terminate the customer if the meter had not been changed.

23 SDG&E, on the other hand, not only claims authority to estimate bills

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<sup>9</sup> DRA DATA REQUEST NUMBER 27, QUESTION 1.

<sup>10</sup> DRA DATA REQUEST NUMBER 27, Question 1.

<sup>11</sup> SDG&E response to DRA DATA REQUEST NUMBER 27, Question 1.

<sup>12</sup> SDG&E response to DRA DATA REQUEST NUMBER 17, Question 1.



1 for all customers who refuse to grant access to AMI meter installers, but SDG&E also  
2 believes it can do so for an unlimited period of time. DRA recommends that  
3 SDG&E address the apparent inconsistency described above and, if necessary, request  
4 additional Commission authorization (beyond Tariff Rule 9A5) to estimate bills for a  
5 limited period of time, subject to the formalized procedures that SDG&E is  
6 developing (as described below).

7 SDG&E has stated that it is developing a formalized procedure for  
8 resolving installation delays caused by customers who do not make their meters  
9 accessible for AMI installation after three attempts,<sup>13</sup> and the procedure is expected to  
10 be finalized early in 2007. SDG&E says it will consider all likely scenarios and  
11 develop a standardized process that resolves access problems while offering the  
12 fairest way to bill customers in the event that (at various isolated addresses) the new  
13 AMI meters are not yet installed. SDG&E has not yet determined the appropriate  
14 grace period before the utility is forced to undertake termination of service under  
15 Tariff Rule 16A11C (Access to applicant's premises) and tariff Rule 11E (non-  
16 compliance with tariffs). The duration of the grace period will likely depend on how  
17 long SDG&E feels is reasonable to provide estimated bills or under what  
18 circumstances meter readers should continue to be deployed to disparate locals to  
19 perform manual reads.<sup>14</sup>

20 DRA asked how many times SDG&E would send out a company  
21 representative, and over what time frame, before giving up and serving notice that  
22 service would be terminated. Also, DRA asked SDG&E how many days SDG&E  
23 will grant customers (beyond seven days) to allow access for a meter change before  
24 service is terminated.<sup>15</sup> The response was that SDG&E cannot answer these

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<sup>13</sup> SDG&E response to DRA DATA REQUEST NUMBER 27, Question 1.

<sup>14</sup> SDG&E response to DRA DATA REQUEST NUMBER 27, Question 1.

<sup>15</sup> DRA DATA REQUEST NUMBER 27, QUESTION 2.

1 questions regarding specifics of its noticing process because it is still under  
2 development.<sup>16</sup> DRA is concerned that SDG&E not let the development of a formal  
3 procedure to address meter access problems “slip through the cracks.” DRA  
4 recommends that SDG&E be allowed to submit its procedure well before the AMI  
5 deployment begins.

#### 6 7 **IV. SDG&E’S OPERATIONAL BENEFITS COMPARED WITH** 8 **THOSE OF PG&E**

9 Because SDG&E is the second AMI application presented before the  
10 commission, it is instructive to compare SDG&E’s costs with those presented in the  
11 first case by PG&E. SDG&E’s operational benefits are only about 55% of AMI  
12 costs, compared to approximately 90% for PG&E’s operational benefits versus AMI  
13 costs. A large part of this difference can be explained by differences between the  
14 two utilities in terms of the underlying meter reading operational costs and in terms of  
15 operational efficiency of meter reading. The analysis below looks at differences in  
16 the “cost per meter reader,” the “cost per meter read,” and the “meters read per meter  
17 reader.”

18 Estimates of total costs for operational meter reading are used for the  
19 year 2005 (in nominal dollars). These costs include meter reading expenses related  
20 to meter readers, related supervisors and support staff (including payroll taxes and  
21 pensions and benefits).<sup>17</sup> PG&E’s total costs are taken from the PG&E Test Year  
22 (TY) 2007 General Rate Case.<sup>18</sup> The numbers of meter readers for PG&E were also

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<sup>16</sup> SDG&E response to DRA DATA REQUEST NUMBER 27, Question 2C.

<sup>17</sup> Included in the expenses are direct labor costs, labor related overhead costs, some non-labor costs related to the labor, and transportation costs (including non-labor overheads).

<sup>18</sup> See the PG&E 2007 GRC, Exhibit PG&E-5, page 5-13, Workpapers. This total excludes “Measuring and Reg. Station Exp. – General.”

1 taken from the TY 2007 General Rate Case.<sup>19</sup> SDG&E's meter reading costs and  
2 numbers of meter readers come from workpapers provided the utility.<sup>20</sup>

3 Table 7-1 shows that PG&E's cost per meter reader is approximately  
4 42% higher than that for SDG&E (or SDG&E's cost per meter reader is about 30%  
5 lower than that for PG&E).

6  
7 Table 7-1  
8 Reading and Investigating Meters – 2006  
9 Cost Per Meter Reader

	SDG&E	PG&E	PG&E Exceeds SDG&E	% Difference
Total Costs	\$12,931,000	\$96,682,000	\$83,751,000	
Meter Readers	173	909	736	
Cost/Meter Reader	\$74,746	\$106,361	\$31,615	42%

10  
11 In 2005, PG&E read approximately 9 million meters per month or about  
12 108 million for the year.<sup>21</sup> SDG&E read about 24.1 million meters in 2005.<sup>22</sup>  
13 Table 7-2 shows that PG&E's cost per meter read is approximately 67% higher than  
14 that for SDG&E (or SDG&E's cost per meter read is about 40% lower than that for  
15 PG&E).

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<sup>19</sup> See the PG&E AMI Project – Benefits “Workpapers Supporting Supplemental Chapter 6 and Exhibit 3, chapter 1 (Updated 10/13/05),” page 1-3. In 2005, PG&E had 834 full time equivalent (FTE) “regular” meter readers plus another 75 “senior meter readers” or 909 FTE’s who worked to read more than 9 million meters per month.

<sup>20</sup> SDG&E “April 14 2006 Revised Workpapers,” Chapter 3-Teeter, “MR Benefits Full Electric.”

<sup>21</sup> See the PG&E 2007 General Rate Case, Exhibit No. PG&E-5, page 5-1, line 13.

<sup>22</sup> SDG&E “April 14 2006 Revised Workpapers,” Chapter 3-Teeter, “MR Benefits Full Electric,” “Cost per Meter Read KPIs Worksheet.”

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Table 7-2  
Reading and Investigating Meters – 2005  
Cost Per Meter Read

	SDG&E	PG&E	PG&E Exceeds SDG&E	% Difference
Total Costs	\$12,931,000	\$96,682,000	\$83,751,000	
Meters Read	24,100,000	108,000,000	83,900,000	
Cost/Meter Read	\$0.54	\$0.90	\$0.36	67%

Table 7-3 shows the numbers of meters read per meter reader for the two utilities. On average, a SDG&E meter reader reads about 20,500 more meters per year than a PG&E meter reader.<sup>23</sup> In percentage terms, a PG&E meter reader reads about 15% fewer meters per year than an SDG&E meter reader (or a SDG&E meter reader reads about 17% more meters per year than a PG&E meter reader).

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<sup>23</sup> One “meter reader” is based on a conversion of total meter readers and meter reading hours into “full time equivalents.”

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Table 7-3  
Reading and Investigating Meters – 2005  
Meters Read Per Meter Reader

	SDG&E	PG&E	PG&E Exceeds SDG&E	% Difference
Meters Read	24,100,000	108,000,000	83,900,000	
Meter Readers	173	909	736	
Meters/Meter Reader	139,300	118,800	(20,500)	(15%)

The “cost per meter reader” and the “cost per meter read” are lower for SDG&E versus PG&E (about 30% and 40% lower respectively). In addition, the “numbers of meters read per meter reader” are higher for SDG&E versus PG&E (about 17% higher). This results in SDG&E’s meter reading operational benefits being noticeably lower than PG&E’s benefits relative to total AMI costs. One reason for the disparity in cost per meter reader is that SDG&E’s labor rates are well below those of PG&E, especially since a SDG&E labor agreement was reached in 2004 that created a two tier wage structure for SDG&E’s meter readers, effectively lowering meter reader pay levels so that they are now, on average, well below those of PG&E for meter readers employed by the companies. An estimate of the labor cost difference comes from the “Total Compensation Study (TCP) Reports” submitted by the utilities in recent General Rate Cases. These studies show that the average base pay for meter readers at PG&E was 54% higher than that of SDG&E’s meter readers as of June 30, 2005.<sup>24</sup> Another labor cost factor is the pay for Customer

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<sup>24</sup> The TCP study for SDG&E was completed by Hewitt Associates in July, 2006, while the study for PG&E was done by Towers Perrin HR Services in August 2005. The methodologies for meter reader are comparable and the average base pay was \$33,000 for SDG&E meter readers versus \$51,073 for PG&E meter readers (about 54% higher). One caveat for the PG&E TCP study is that it did not consider the cost of the “hiring  
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1 Service Field (CSF) employees, who complement the meter reading staff by  
2 performing meter service functions. These employees account for about 30% of the  
3 total labor costs relating to meter reading (meter readers account for the other 70%).  
4 CSF employees at PG&E are estimated to make about 19% more than their  
5 counterparts at SDG&E.<sup>25</sup> An average of the differences in labor rates (weighted by  
6 the percentage of workers in each category) shows a direct meter reading labor cost  
7 difference of about 44%.<sup>26</sup>

8 In 2005, about 81% of SDG&E's total meter reading costs were labor  
9 related (\$10.51 million versus the total cost of \$12.93 million).<sup>27</sup> If, hypothetically,  
10 the total meter reading labor costs were 44% higher for SDG&E, then the AMI related  
11 benefits for meter reading and CSF labor at full deployment would be about 36%  
12 higher (81% times 44%). At the same time, SDG&E's labor related meter reading  
13 operational benefits are about 51% of total average annual benefits at full deployment  
14 (about \$11.5 million divided by \$22.4 million).<sup>28</sup> Thus, 36% higher meter reading

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hall" labor used by PG&E to perform some of the meter reading. DRA has not undertaken an analysis of this labor, but the cost would likely be less than that for the average PG&E meter readers and therefore would likely lower the difference somewhat between SDG&E and PG&E labor costs. In 2005, hiring hall labor accounted for about 17% of the total number of Full Time Equivalent meter readers used by PG&E to calculate AMI benefits – 153 FTE's versus 909 FTE meter readers and senior meter readers (AMI Exhibit PG&E-3, Chapter 1, testimony of Bruce Agid).

<sup>25</sup> The average hourly rate for SDG&E "meter service persons" is \$25.68 while the comparable hourly rate for a PG&E "service meterperson" is \$30.43. These positions appear to perform the same meter related duties. The pay rates were taken from the websites of IBEW for both SDG&E and PG&E unionized employees: [www.IBEW465.org/2005cba.pdf](http://www.IBEW465.org/2005cba.pdf) for SDG&E and [www.IBEW1245.com/Agreements/physical\\_wages\\_2006-2008.pdf](http://www.IBEW1245.com/Agreements/physical_wages_2006-2008.pdf) for PG&E.

<sup>26</sup> The weighted average is calculated as follows: 54% times 70% (for meter readers) plus 19% times 30% results in a difference in average pay of about 44%.

<sup>27</sup> This is from SDG&E "April 14 2006 Revised Workpapers," Chapter 3-Teeter, "MR Benefits Full Electric," "Cost per Meter Read KPIs Worksheet." Total meter reading labor costs in 2005 (including payroll taxes, pensions and benefits, etc.) amounted to about \$10,507,876, while total meter reading costs were about \$12,930,714.

<sup>28</sup> See "Volumes 1 and 2" of SDG&E's AMI filing, March 28, 2006, Table JST 3-2. DRA took the "Meter Reading and CSF" O&M average annual benefits of \$11.52 million (at full deployment) and divided this by the total average annual benefits of \$22.25 million.

1 labor costs would result in the total benefits for SDG&E at full deployment being  
2 about 18% higher (36% times 51%). This would result in about an additional \$48  
3 million of operational benefits in net present value terms.

4 In regard to the somewhat greater efficiency of SDG&E's meter readers  
5 (based on meters read per meter reader), this disparity could be due mainly to  
6 differences in the service territories of the two utilities, with PG&E's service area  
7 having more diversity in terms of weather and geography. Given the lower labor  
8 rates and the greater efficiency of SDG&E's meter readers, it is not surprising that the  
9 meter reading costs are relatively lower for SDG&E than PG&E.<sup>29</sup> The lower labor  
10 costs plus the greater meter reading efficiency appear to be two reasons why  
11 SDG&E's operational benefits are only about 55% of AMI costs, compared to  
12 approximately 90% for PG&E's operational benefits versus AMI costs.

13 Differences in labor costs account for a large part of the difference in  
14 AMI benefits relative to AMI costs for SDG&E versus PG&E. If pay levels for  
15 meter readers were the same at the two utilities, SDG&E's AMI benefits could range  
16 up to 18% higher (or up to an additional \$48 million of operational benefits in net  
17 present value terms).<sup>30</sup>

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<sup>29</sup> Based on Table 7-3, the need to read 15% more meters per year would require SDG&E to hire about 15% more meter readers, thus increasing their labor costs.

<sup>30</sup> As pointed out in footnote 23, 22% would likely be the upper limit since about 17% of PG&E's full-time equivalent meter reading employees are "hiring hall" labor who most likely have lower average total labor costs than the regular PG&E meter reading employees.